FAGE 04

## IN THE CLAIMS:

- (Currently amended) A diffusion resistor comprising: 1.
  - a substrate;

9723857786

- a diffusion region formed in the substrate;
- a first contact region extending down from a surface of the substrate;
- a second contact region extending down from the surface of the substrate;
- a first conductive contact electrically connected to the first contact region such that current can flow between the first contact and the first contact region;
- a second conductive contact electrically connected to the second contact region such that current can flow between the second contact and the second contact region; and
- a third contact connected to the surface of the substrate, wherein the third contact is located between the first conductive contact and the second conductive contact, wherein the third contact forms a Schottky diode such that application of a voltage to the third contact forms a depletion region that changes in size depending on the voltage applied to the third contact to change a resistance in the depletion diffusion resistor, wherein the first conductive contact and the second conductive contact form two ends of the diffusion resistor.
- (Original) The diffusion resistor of claim 1, wherein the third contact is connected 2. to the surface by a salicided region.
- (Original) The diffusion resistor of claim 1, wherein the substrate is a p-type 3. substrate.
- (Original) The diffusion resistor of claim 1, wherein the substrate is an insulator 4. in a silicon-on-insulator substrate.
- (Original) The diffusion resistor of claim 3, wherein the first contact region and 5. the second contact region are n+ contact regions.

Page 2 of 12 Erickson ct al. - 10/668,875

- 6. (Currently amended) The diffusion resistor of claim 5, wherein the first conductive contact, the second conductive contact, and the third contact are formed using metal layers.
- 7. (Original) The diffusion resistor of claim 6, wherein the metals layers are tungsten metal layers.
- 8. (Original) The diffusion resistor of claim 1, wherein the diffusion region contains n-type dopants having a concentration of about 1 x 10<sup>15</sup>/cm<sup>3</sup>.
- 9. (Original) The diffusion resistor of claim 1, wherein the first contact region and the second contact region contain n-type dopants having a concentration of about  $1 \times 10^{18}$ /cm<sup>3</sup> to about  $1 \times 10^{20}$ /cm<sup>3</sup>.
- 10-19. (Withdrawn)
- 20. (New) The diffusion resistor of Claim 1, in combination with a driver circuit having an input and an output, wherein the diffusion resistor is coupled between the input and the output of the driver circuit to provide a variable resistance feedback path.